

**CLAIMS**

1. An emulsion comprising an inner phase, an outer phase and an emulsifying polymer, one of the phases being  
5 an aqueous phase, characterized in that the emulsifying polymer is a dendritic polymer.

2. The emulsion as claimed in the preceding claim, characterized in that the dendritic polymer is  
10 dispersible or soluble in water, at the pH of the emulsion.

3. The emulsion as claimed in one of the preceding claims, characterized in that the dendritic polymer is a  
15 hyperbranched polymer comprising hydrophobic groups, and hydrophilic or potentially hydrophilic groups.

4. The emulsion as claimed in one of the preceding claims, characterized in that the emulsion is a direct  
20 emulsion, the aqueous phase being the outer phase, and in that at least some of the hydrophilic or potentially hydrophilic groups are groups present at the polymer chain ends.

25 5. The emulsion as claimed in one of claims 1 to 3, characterized in that the emulsion is an inverse emulsion, the aqueous phase being the inner phase, and in that at least some of the hydrophobic groups are groups present at the polymer chain ends.

30 6. The emulsion as claimed in one of the preceding claims, characterized in that the emulsion is a multiple emulsion comprising an inner aqueous phase, an intermediate phase and an outer aqueous phase, the inner  
35 phase and the intermediate phase constituting an inner

inverse emulsion, the intermediate phase and the outer phase constituting an outer direct emulsion, and in that at least one of the emulsions chosen from the inner inverse emulsion and the outer direct emulsion comprises the dendritic polymer.

7. The emulsion as claimed in the preceding claim, characterized in that the outer direct emulsion and the inner inverse emulsion comprise the dendritic polymer.

8. Emulsion as claimed in one of the preceding claims, characterized in that the dendritic polymer is a hyperbranched polyamide or a hyperbranched polyester.

9. The emulsion as claimed in one of claims 1 to 6, characterized in that the dendritic polymer is a hyperbranched polymer capable of being obtained by a process comprising the following steps:

a) polycondensation, so as to obtain a polymer, of monomers comprising at least one plurifunctional monomer comprising at least three reactive functional groups, of the following formula (I):



in which formula

- f is an integer greater than or equal to 2, preferably ranging from 2 to 10, most particularly equal to 2,

- the symbol A represents a reactive functional group or a group carrying a reactive functional group chosen from amino, carboxyl, hydroxyl, oxiranyl, halo and isocyanato functional groups, or precursors thereof,

- the symbol B represents a reactive functional group or a group carrying a reactive functional group chosen from amino, carboxyl, hydroxyl, oxiranyl, halo and isocyanato functional groups, or precursors thereof, which is an antagonist of A,

- the symbol R represents a linear or branched aliphatic, cycloaliphatic or aromatic polyvalent hydrocarbon residue containing from 1 to 50, preferably from 3 to 20 carbon atoms, optionally interrupted by one or more oxygen, nitrogen, sulfur or phosphorus heteroatoms, said residue optionally carrying functional groups not capable of reacting with the functional groups A and B,  
Step b) optionally at least partial hydrophilic functionalization of the polymer obtained in the polycondensation step.

10. The emulsion as claimed in the preceding claim, characterized in that the monomers of step a) comprise:  
• at least one bifunctional monomer, in linear form, of formula (II) or in the corresponding cyclic form, comprising two polycondensation/polymerization reactive functional groups



in which formula:

- the symbol A', which is identical to or different from A, represents a reactive functional group chosen from amino, carboxyl, hydroxyl, oxiranyl, halo and isocyanato functional groups, or precursors thereof, which is an antagonist of B and B',
- the symbol B', which is identical to or different from B, represents a reactive functional group chosen from amino, carboxyl, hydroxyl, oxiranyl, halo and isocyanato functional groups, or precursors thereof, which is an antagonist of A and A',
- the symbol R', which is identical to or different from R, represents a linear or branched aliphatic, cycloaliphatic or aromatic polyvalent hydrocarbon residue containing from 1 to 50, preferably from 3 to 20 carbon atoms, optionally interrupted by one or more oxygen, nitrogen, sulfur or phosphorus

heteroatoms, said residue optionally carrying functional groups not capable of reacting with the functional groups A, A', B and B',

\* the reactive functional group A' being capable of reacting with the functional group B and/or the functional group B' by condensation;

\* the reactive functional group B' being capable of reacting with the functional group A and/or the functional group A' by condensation;

10 • and/or at least one "core" monomer of formula (III), comprising at least one functional group capable of reacting, by condensation, with the monomer of formula (I) and/or the monomer of formula (II)



15 in which formula

- n is an integer greater than or equal to 1, preferably ranging from 1 to 100, most particularly from 1 to 20,

20 - the symbol B'' represents a reactive functional group, which is identical to or different from B or B', chosen from amino, carboxyl, hydroxyl, oxiranyl, halo and isocyanato functional groups, or precursors thereof, which is an antagonist of A and A',

25 - the symbol R<sup>1</sup> represents a linear or branched aliphatic, cycloaliphatic or aromatic polyvalent hydrocarbon residue containing from 1 to 50, preferably from 3 to 20 carbon atoms, optionally interrupted by one or more oxygen, nitrogen, sulfur or phosphorus heteroatoms, or an organosiloxane or polyorganosiloxane residue, said residue R<sup>1</sup>  
30 optionally carrying functional groups not capable of reacting with the functional groups A, A', B, B' and B'',

35 \* the reactive functional group B'' being capable of reacting with the functional group A and/or the functional group A' by condensation;

- and/or at least one "chain limiting" mono-functional monomer of formula (IV)



in which formula

- 5 - the symbol  $A''$  represents a reactive functional group, which is identical to or different from  $A$  or  $A'$ , chosen from amino, carboxyl, hydroxyl, oxiranyl, halo and isocyanato functional groups, or precursors thereof, which is an antagonist of  $B$ ,  $B'$  and  $B''$ ,
- 10 - the symbol  $R^2$  represents a linear or branched aliphatic, cycloaliphatic or aromatic polyvalent hydrocarbon residue containing from 1 to 50, preferably from 3 to 20 carbon atoms, optionally interrupted by one or more oxygen, nitrogen, sulfur
- 15 or phosphorus heteroatoms, or an organosiloxane or polyorganosiloxane residue, said residue  $R^2$  optionally carrying functional groups not capable of reacting with the functional groups  $A$ ,  $A'$ ,  $A''$ ,  $B$ ,  $B'$  and  $B''$ ,
- 20 \* the reactive functional group  $A''$  being capable of reacting with the functional group  $B$  and/or the functional group  $B'$  and/or the functional group  $B''$  by condensation;
- at least one of the reactive functional groups of at
- 25 least one of the monomers of formula (II), (III) or (IV) being capable of reacting with a functional group which is an antagonist of the plurifunctional monomer of formula (I).

- 30 11. The emulsion as claimed in either of claims 9 and 10, characterized in that the functional groups  $A$ ,  $A'$ ,  $A''$ , and  $B$ ,  $B'$ ,  $B''$  are chosen from the reactive functional groups or the groups carrying reactive functional groups chosen from amino, carboxyl, hydroxyl and oxiranyl
- 35 functional groups, or precursors thereof.

12. The emulsion as claimed in one of claims 9 to 11, characterized in that at least one chain limiting monomer is used, said monomer being hydrophilic or potentially hydrophilic.

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13. The emulsion as claimed in one of the preceding claims, characterized in that it is a formulation of a cosmetic product, of a detergent product, of a paint or of a coating.

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14. The emulsion as claimed in the preceding claim, characterized in that the cosmetic product formulation is a skin or hair care product.

15 15. The use of a dendritic polymer as defined in one of the preceding claims, as emulsifying agent.

16. The use as claimed in the preceding claim, in a formulation of a cosmetic product, of a detergent  
20 product, of a paint or of a coating.

17. The use as claimed in the preceding claim, characterized in that the cosmetic product formulation is a skin or hair care product.